

Title (en)  
IMPROVED PARALLEL ION OPTICS AND APPARATUS FOR HIGH CURRENT LOW ENERGY ION BEAMS

Title (de)  
PARALLELE IONENOPTIKEN UND VORRICHTUNG FÜR HOCHSTROM, NIEDRIGENERGIEIONENSTRAHLEN

Title (fr)  
ELEMENTS D'OPTIQUE IONIQUES PARALLELES PERFECTIONNES ET APPAREIL POUR FAISCEAUX IONIQUES DE FAIBLE PUISSANCE ET DE COURANT ELEVE

Publication  
**EP 0846190 A1 19980610 (EN)**

Application  
**EP 96924274 A 19960612**

Priority  
• US 9610367 W 19960612  
• US 86095 P 19950613

Abstract (en)  
[origin: WO9641900A1] A device (1700) for the parallel processing of ions is provided. The device may be utilized for thin film deposition or ion implantation and may include the following: an ion source (1702), ion capture (1704) and storage ion optics (1708), mass selection ion optics (1706), neutral trapping elements, extraction ion optics, beam neutralization mechanisms, and a substrate on which deposition and thin film growth occurs is provided. Ions are captured and stored within a closely packed array of parallel ion conducting channels. The ion conductive channels transport high current low energy ions from the ion source to irradiate the substrate target. During transport, ion species can be mass selected, merged with ions from multiple sources, and undergo gas phase charge exchange ion molecule reactions. Additionally, neutrals from the ion source, ion-molecule reaction reagent gases, residual background gas, or neutralization of ions may be eliminated from the processing stream by turbo pumping, cryo pumping, and cryocondensation on some of the ion optic elements. Different types of ion optic elements, including elements which are parallel or perpendicular to the ion path, and neutral trapping elements may be combined in different ways to achieve thin film ion deposition over a large homogeneous substrate surface.

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**C23C 16/00**; **H01J 7/24**

IPC 8 full level  
**H01J 37/317** (2006.01); **C23C 14/22** (2006.01); **C23C 14/32** (2006.01); **C23C 14/48** (2006.01); **H01J 37/30** (2006.01); **H01J 49/42** (2006.01)

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